

Mammalia, Didelphimorphia, Didelphidae, *Glironia venusta* Thomas, 1912 and *Chironectes minimus* (Zimmermann, 1780): Distribution extension for eastern Amazonia

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ABSTRACT: We report a new record for the bushy-tailed opossum *Glironia venusta* Thomas, 1912 and the water opossum *Chironectes minimus* (Zimmermann, 1780) in the Floresta Nacional de Carajás, municipality of Parauapebas, state of Pará, Brazil (06°03'00" S, 50°15'00" W). This study represents the second record of *Glironia venusta*, but the first voucher specimen for eastern Brazilian Amazon. For *Chironectes minimus*, this record extends the range of the species 558 km southeastwards from the closest known locality in Pará.

During an inventory of small mammal species within the Floresta Nacional de Carajás in the Brazilian state of Pará, two species of poorly known and rarely surveyed marsupials were collected as voucher specimens: *Glironia venusta* Thomas, 1912 and *Chironectes minimus* (Zimmermann, 1780). Both species present diagnostic characters that are easy to identify (see Gardner 2008; Voss and Jansa 2009), being highly adapted to specific habitats.

The genus *Glironia* is monotypic, the single living species, *Glironia venusta* Thomas, 1912, is a distinctive medium-sized and bushy-tailed opossum (Marshall 1978a; Wilson and Reeder 2005). Little is known about the real geographic distribution of this rare and vulnerable species (Bernarde and Rocha 2003; Díaz and Willig 2004), known from only 20 localities in South America, and restricted to the Amazon Forest in Bolivia, Ecuador, Peru, Brazil and Colombia (Marshall 1978a; Gardner 2008). In Brazil, *G. venusta* has been recorded from the states of Acre (Bernarde and Machado 2008), Amazonas (Nogueira *et al.* 1999; Calzada *et al.* 2008), Pará (Da Silva and Langguth 1989; Rossi *et al.* 2010), Rondônia (Bernarde and Rocha 2003; Santos-Filho *et al.* 2007) and Mato Grosso (Santos-Filho *et al.* 2007).

The voucher specimen (field number DG 67), an adult male weighting 119 g, was captured in the Floresta Nacional de Carajás (06°03'00" S, 50°15'00" W), municipality of Parauapebas, state of Pará, Brazil. The specimen was captured in August, 2010, during the dry season, in a Sherman trap placed in the lower canopy of the rain forest (8.6 m high). The specimen was prepared as a skin and full skeleton, with associated tissue samples, and is deposited in the Museu Nacional, Universidade Federal do Rio de Janeiro (MN), with the reference number

MN 75062 (Figures 1 and 2). This is the second record of *G. venusta* from the state of Pará and the eighth for Brazil (Figure 3). Rossi *et al.* (2010) first reported this species in the Floresta Nacional Tapirapé-Aquiri, municipality of Marabá, Brazil, by a photograph.

External measurements: Body length, 178 mm; Tail length, 214 mm; Hind foot length (including claw), 35 mm; Ear length from notch, 27 mm. Cranial measurements,



FIGURE 1. *Glironia venusta* (male, MN 75062) trapped in eastern Amazonia, Floresta Nacional de Carajás, Pará, Brazil.

following Voss *et al.* (2001) are: Nasal Breadth (NB), 5.85 mm; Least Interorbital Breadth (LIB), 6.74 mm; Least Postorbital Breadth (LPB), 8.46 mm; Zygomatic Breadth (ZB), 24.02 mm; Palatal Length (PL), 23.84 mm; Condylbasal Length (CBL), 39.18 mm; Palatal Breadth (PB), 11.21 mm; Maxillary Toothrow (MTR), 16.65 mm; Molar Length (LM), 7.77 mm.

The monotypic genus *Chironectes* is represented by *Chironectes minimus* (Zimmermann, 1780), a large and

semiaquatic opossum (Marshall 1978b; Nowak 1991). According to Brown (2004) and Gardner (2008), *C. minimus* can be found in tropical and subtropical habitats of Central and South America, in Panama, northward into southern Mexico, in Colombia, Ecuador, Peru, Bolivia, Paraguay, northeastern Argentina, in Venezuela, Guyana, French Guiana, southern to Brazil. In the Brazilian Amazon, it is known from only four localities in the state of Pará: Barcarena (Pine 1973) and according to Brown (2004): Cametá; “Peixe-boi” and Ilha das Onças, in Belém and Utinga, and was recently recorded for three localities in the northwestern of Maranhão state (Oliveira *et al.* 2007).

Despite its wide distribution, *C. minimus* is still a poorly understood species regarding its biogeographic-ecological features along the geographical distribution. According to Galliez *et al.* (2009) this species does not show seasonality in its reproduction, as commonly observed in other marsupial species. *Chironectes minimus* has some morphological adaptations to semi-aquatic life, such as an interdigital membrane in the hind feet, a developed pouch and a laterally compressed tail (Marshall 1978b; Monteiro-Filho *et al.* 2006). Individuals of water opossum are rarely captured (Bressiani and Graipel 2008) and few specimens can be found in scientific collections (Monteiro-Filho *et al.* 2006). However, Emmons (1990) and Monteiro-Filho *et al.* (2006) considered it a common species. This information is in accordance with the methods frequently used to record *C. minimus*, such as visual reports (Bergallo 1994; Voss *et al.* 2001), firearms (Mondolfi and Padilla 1958; Voss *et al.* 2001) and hand-captures (Mares *et al.* 1989; González and Fregueiro 1998; Voss *et al.* 2001; Graipel *et al.* 2006). This difficulty is related to the fact that *C. minimus* is not attracted to the bait in live traps (Voss and Emmons 1996; Monteiro-Filho and Graipel 2006; Monteiro-Filho *et al.* 2006) and inhabit rivers and brooks, where it is difficult



FIGURE 2. *Glironia venusta* (male, MN 75062), dorsal, ventral, and lateral views of skull; Floresta Nacional de Carajás, Pará, Brazil.

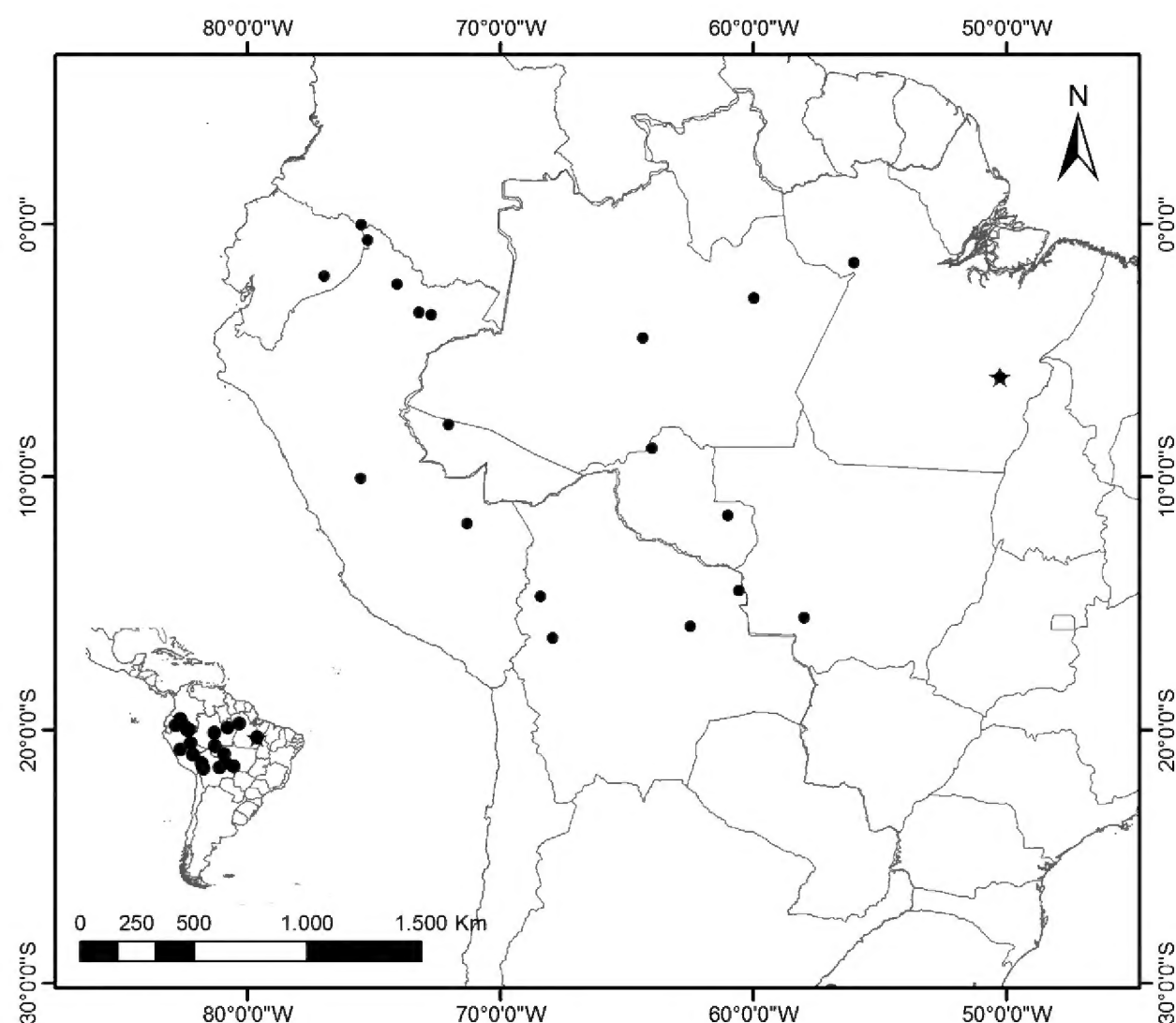


FIGURE 3. Geographic distribution of *Glironia venusta*. Black circles represent data from literature (Da Silva and Langguth 1989; Nogueira *et al.* 1999; Bernarde and Rocha 2003; Díaz and Willig 2004; Santos-Filho *et al.* 2007; Calzada *et al.* 2008; Bernarde and Machado 2008; Gardner 2008; Rossi *et al.* 2010), and the star represents the new record in Floresta Nacional de Carajás, State of Pará, Brazil.

to set live traps.

There are few records of this species, especially in areas outside the shores of Brazil. The specimen of *C. minimus* surveyed, an adult male, was not trapped or collected manually, but was found dead in a road inside the Floresta Nacional de Carajás, municipality of Parauapebas, Pará, Brazil. It was prepared as a skeleton and deposited at the Museu Nacional, Universidade Federal do Rio de Janeiro (MN), with the reference number MN 78340. However, no measurements were undertaken due to the poor condition of the specimen (Figure 4). The specimen agrees with the description of *C. minimus* (Zimmermann, 1780), with dorsal color pattern silvery gray, overlaid with dark brown to black markings that consist of a narrow mid-dorsal stripe from the crown to the base of the tail, interconnecting four broad blackish patches located, each one, over shoulders, in the center of back, hips, and lower rump (Figure 4). The shoulder and rump patches extend laterally over the legs. The venter is bright white, sharply contrasting with the gray color of the sides. The muzzle, crown of the head, and a band extending through the eye to below the ear, are blackish-brown. The tail is either all black or black for about 4/5 of its length and yellowish-white terminally (Marshal 1978b; Nowak 1991). This species has a streamlined body shape, large webbed hind feet (Figure 5), dense and non wettable fur. Water opossums are unique among neotropical marsupials in their opposable 6th “finger” in the front feet, derived from a wrist bone, and also in that both sexes have a well-developed waterproof marsupium (Marshal 1978b; Nowak 1991).

The present record extends the geographic distribution of *C. minimus* about 558 km southward from the closest known locality in the state of Pará (Figure 6). This record is more inland the Brazilian Amazon, the remaining records are on the coast or on the edge of fragments in the extreme southeast of the Brazilian Amazon Forest. This record is

important because the Floresta Nacional de Carajás is the largest remaining forest fragment in southeastern Pará in good conservation condition and the area is set within a complex of protected areas. Such information can be very important for future work with this species.



FIGURE 4. Dorsal view of skin of *Chironectes minimus* (male, MN 78340) from Floresta Nacional de Carajás, State of Pará, Brazil.



FIGURE 5. The large webbed hind feet of *Chironectes minimus* (male, MN 78340) from Floresta Nacional de Carajás, State of Pará, Brazil.

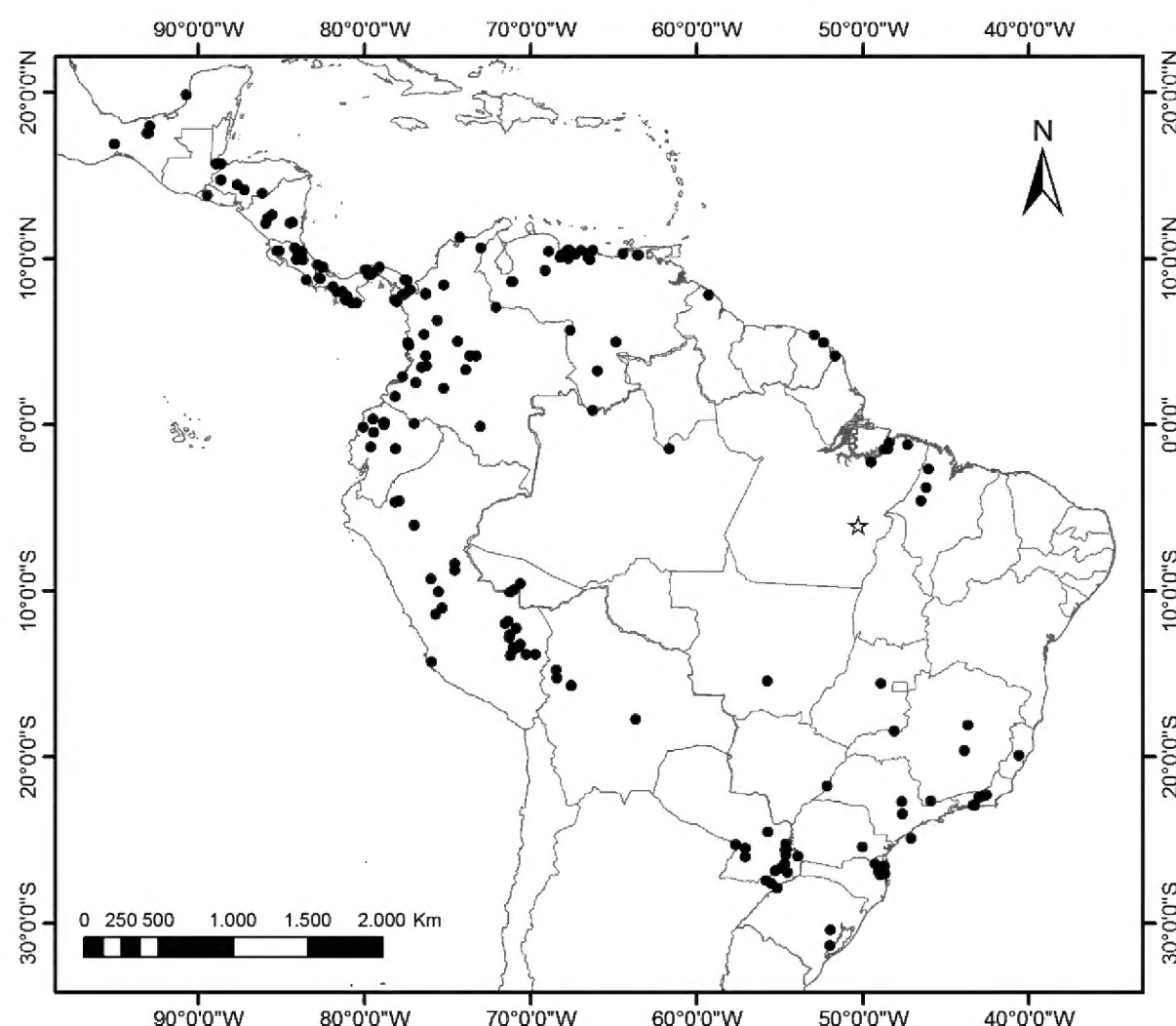


FIGURE 6. Geographic distribution of *Chironectes minimus*. Black circles represent data from literature (Brown 2004; Oliveira et al. 2007; Gardner 2008), and the star represents the new record from Floresta Nacional de Carajás, in the State of Pará, Brazil.

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